

3. Week 14

$$(A) \quad MR_A = MC, 100 - 2q_A = 20 \Rightarrow q_A = 40 \Rightarrow P_A = 60$$

$$MR_B = MC, 80 - 2q_B = 20 \Rightarrow 4q_B = 30 \Rightarrow P_B = 50$$

(B) 先將 demand 水平相加 = (系統一定價)

$$\left. \begin{array}{l} CS = CS_A + CS_B = 800 + 450 = 1250 \\ TS = CS + PS = 3750 \end{array} \right\}$$

$$\begin{cases} p = 100 - q, & q \leq 20 \\ = 90 - 0.5q, & q > 20 \end{cases} \Rightarrow \begin{cases} MR_1 = 100 - 2q, & q \leq 20 \\ MR_2 = 90 - q, & q > 20 \end{cases}$$

$$\text{令 } MR_1 = MC \Rightarrow 100 - 2q = 20 \Rightarrow q = 40$$

$$\text{再令 } MR_2 = MC \Rightarrow 90 - q = 20 \Rightarrow q = 70 \rightarrow p = 55$$

$$(C) \quad F = (80 - p) \times q / 2 = (80 - p) \times \frac{(80 - p)}{2} = \frac{(80 - p)^2}{2}$$

$$\pi = 2F + (p - 20) \times (q_A + q_B) = (80 - p)^2 + (p - 20) \times (80 - 2p) \\ = -p^2 + 60p + 2800$$

由一階條件可解得 $p = 30$ 故 $F = 1250$ $q = 120$

$$CS = CS_A(p=30) + CS_B(p=30) - 2F = 2450 + 1250 - 2500 = 1200$$

$$TS = CS + PS = (1200 + 2500) = 3700$$